



SINAPSE

Scottish Imaging Network - A Platform for Scientific Excellence

The following Universities are charitable bodies, registered in Scotland, with registration numbers as below.





People

Chief Scientist Office



SINAPSE - Why?

Massive expansion in imaging techniques :

- clinical practice
- research



Serious shortage of radiologists, medical physicists, image analysts, IT specialists, etc, etc

Much “*imaging research*” not being done by those trained in imaging – unlikely to be effective

Existing training unable to keep pace with demand.

Single centre studies are too small – need multicentre studies

SINAPSE - background

Scottish Science Advisory Committee December 2006

1. Need for Scottish imaging strategy to improve links between academia and the NHS to foster fundamental to clinical interactions, shared planning of resources (human and hardware) and data processing systems to bridge strategic gaps to catalyse more effective research but also with improved clinical care.

Chief Scientist's Office Portfolio Strategy Group

Sept 2006 – “Need for senior academic(s) in imaging, because of the rapid expansion in imaging equipment and considerable opportunities”

SINAPSE - background

Major equipment investments in Scotland by both NHS and universities

Procurement of:

- four PET CT scanners
- cyclotrons
- several MR scanners
- EEG and MEG equipment

SINAPSE - background

Clinical Research Networks :

Stroke

Dementia - DeNDRoN

Mental Health

Diabetes

Paediatrics

Oncology

SINAPSE concept supported by all Clinical Research Networks because it will provide a “backbone” of imaging expertise

Plan

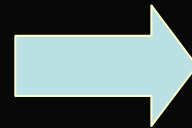
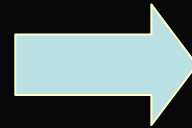
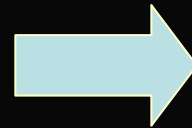
Boost for research infrastructure:

Staff – all levels

Equipment – key elements to achieve common platforms

Shared expertise between centres

Training – all levels, but particularly graduates and post-docs



Greater critical mass

Optimise clinical trials

Apply these principles to multimodality brain research:

MRI

PET/SPECT

EEG/EMG/MEG

SINAPSE

Mission :

A single virtual national clinical imaging research laboratory for 5.5 million people which will be unique in the world

A virtual national training “college” for imaging researchers of the future

SINAPSE – the benefits

Advance health care and science:

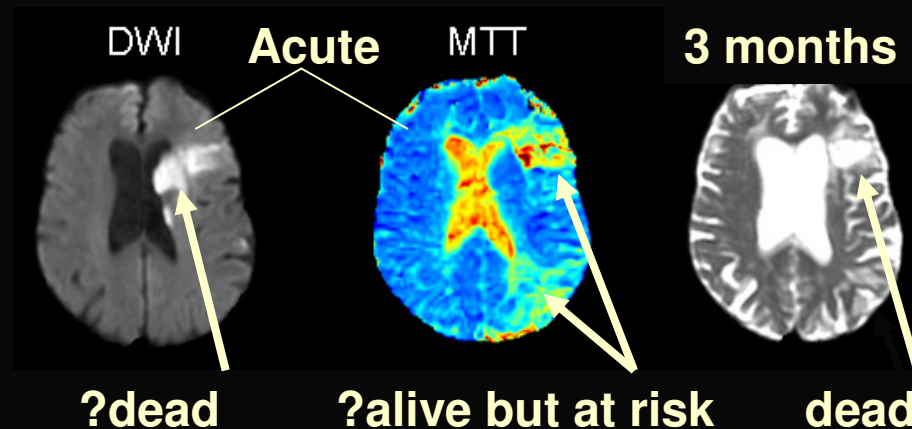
- disseminate best research practice
- ethical policy for imaging research
- access state-of-the-art facilities and expertise
- increase study recruitment to whole population
- avoid duplication of small statistically insignificant studies
- rationalise image transfer and storage
- improve guidelines through evidence-based use of imaging

SINAPSE : model project and why IT network is critical



Translational
Medicine
Research
Collaboration

Acute Stroke Imaging Project



Q: In acute ischaemic stroke, how can we identify the potentially salvageable tissue so that treatment can be delivered effectively?

SINAPSE - TMRC Acute Stroke Imaging Project

80 patients –

40 CT first

40 MR first

Patient scan reporting - NHS

Centralised analysis - Univ

Glasgow – CT – NHS

Edinb - MR – Univ.

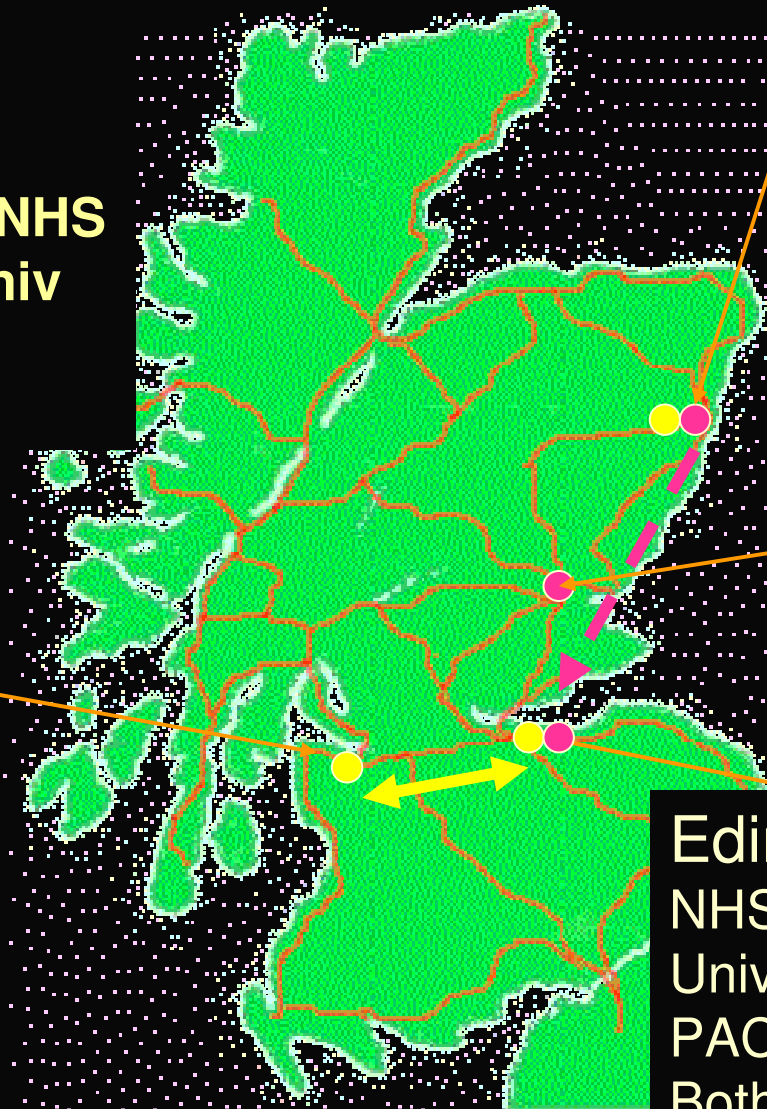
Glasgow (22)

NHS CT

NHS/Univ MR

PACS – yes

— PACS
— uNET



Aberdeen (10)

NHS CT

Univ MR

PACS – no

Univ MR to uNET

TMRC

Data store

Edinburgh (19)

NHS CT

Univ MR

PACS – yes

Both transfer to PACS

Univ MR to uNET

Research imaging - issues

Patients:

- relevant diagnostic data need to be reported and available clinically \Rightarrow NHS
- research – specific data need anonymised, analysed and securely stored \Rightarrow University
- PACS does not support colour images; complex analysis needs University equipment

Ethics

Data Control

Secure data transfer *in both directions*

Research activity increasing on Univ *and NHS* systems

Normal volunteers - ditto

ACCOUNTABILITY

A national solution is required

Lack of Univ-NHS connection

Example of what can go wrong:

Friday

Patient in research study attended for routine follow-up in study of mood and brain chemicals after stroke

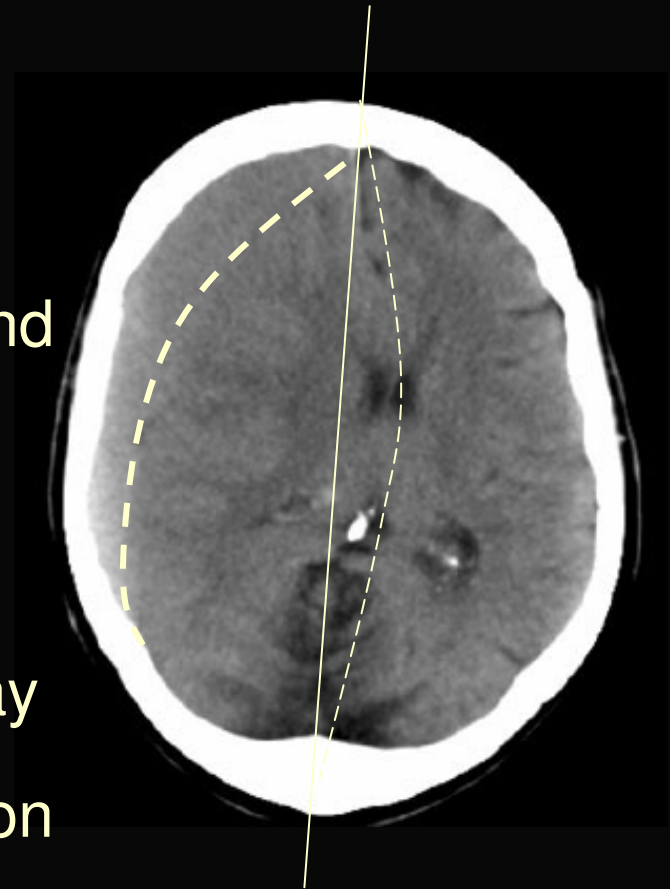
MR – research scanner Edinburgh

Pre –PACS linked days

Printer broken

Only a hand-written interim report to say which side of the head was affected as the surgeons took her to theatre on Sat am

Seamless image transfer from research to NHS is crucial



Networking Solutions

This is possible and arguably essential

University



NHS

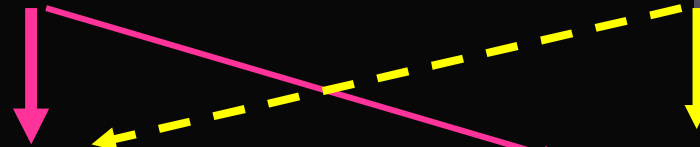


Analysis
Archiving (size)
Long term studies

University
Image Analysis
and Archive

NHS
Image Reporting
and Archive

Reporting
Clinical Access
Future health



SINAPSE in Scotland – Unique framework

The only multimodality, national, research imaging network – internationally unique

Unique subject and patient cohorts in Scotland

Unique NHS imaging resources – PACS

Crucial for new NHS research funding model



A virtual national imaging laboratory enmeshed within a clinical research infrastructure provided by the DoH Clinical Research Networks and emerging Scottish Academic Health Sciences Centre

Important for the Health and Wealth of the Nation

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